LANGUAGE/ SOFTWARE NOTES PASCAL

Codata's PASCAL is an implementation of the December 1980 proposed ISO standard for PASCAL. PASCAL's block structure facilitates modular program development and simplifies debugging and maintenance. It also offers the high-level nested control structures of most Algol-like languages, meeting requirements of the trend towards highly structured programming.

PASCAL is known for it's flexibility. In addition to supporting separate code module compilation, it allows the user to link these modules to those created in other Codata application languages including C, FORTRAN, and 68000 Assembler. PASCAL also offers user-definable data types, allowing application programmers to create complex data structures to meet specific needs.

KEY FEATURES

☐ Extended to include features of the UCSD Pascal System implementation.
☐ Utilizes the full 32-bit addressing capability of the 68000 processer.
☐ Supports separate compilation of code modules.
☐ Code modules can be linked with external modules written in other Codata application languages, including C, FORTRAN, and 68000 Assembler.
☐ Supports floating point board for fast floating point applications.
☐ User-definable data types allow the creation of powerful data structures.
☐ Intrinsic I/O handling procedures for both data files and interactive terminals.
☐ Full complement of selectable compile time options such as include files, optional range checking, and run-time checks.
☐ Incorporates dynamic storage allocation and de-allocation procedures NEW, DISPOSE, MARK and RELEASE.
☐ Highly structured control statement constructs.
☐ Standard PASCAL string manipulation routines including LENGTH, COPY, CONCAT, POS, DELETE, and INSERT.
☐ Complete arithmetic function libraries with trigonometrics, logarithms, and exponentiation.

COMPILER OPTIONS

☐ Control listing
☐ Enables error logging
☐ Inhibits code generation

PASCAL runs under UNISIS,™ Codata's implementation of the UNIX™ operating system.

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CODATA SYSTEMS CORPORATION

LANGUAGE/ SOFTWARE NOTES
ASM68
68000 MACRO ASSEMBLER

ASM68, Codata's 68000 macro assembler, provides power and ease of use by programmers for developing high speed applications on Codata systems. ASM68 translates source programs using standard Motorola syntax and produces relocatable object code and corresponding symbol tables. ASM68 has the facility to handle nested macro definitions and allows for upper or lower case operation codes and C-style escapes in character strings. ASM68 is available in source or binary format for the Codata family of 68000 microcomputer systems.

FEATURES

☐ macros
☐ nested macro definitions
☐ Motorola standard syntax
☐ compatible with UNIX™ object call formats
☐ error messages rather than codes
☐ optional case mnemonics
☐ C-style escapes in character strings

ASM68 is well suited for applications which require fast execution, compact size, or control of system hardware. ASM68 translates source code into object code, with optional listing of actual 68000 opcode values for each instruction of the resulting executable output. Most of the features of the Motorola 68000 Resident Structured Assembler are provided by this macro assembler adapted to the UNISIS™ environment.

ASM68 supplements the standard UNISIS assembler, AS, which is intended for use with the C-compiler. ASM68 implements all directives of S, plus provides the power and facility of a macro assembler. The ASM68 package includes a utility, acmcvt, which aids in the translation of programs written in AS syntax into Motorola syntax.

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CODATA SYSTEMS CORPORATION

LANGUAGE/ SOFTWARE NOTES BASIC PLUS

Codata's BASIC PLUS is an implementation of the popular BASIC PLUS programming language and is fully compatible with BASIC PLUS offered by DEC. It is one of the most sophisticated BASIC dialects, yet has retained the popular, straightforward, user friendly qualities that characterize most BASIC implementations.

BASIC PLUS provides an interactive interpreter mode which is ideal for design and debug purposes. It can also compile BASIC source into object code offering users speed and efficiency.

BASIC PLUS offers a powerful control statement syntax that accommodates highly structured BASIC programs. A rich data type set is supported including double precision floating point, integer, string, and multi-dimensional arrays.

KEY FEATURES

☐ An extended implementation of the popular BASIC PLUS programming language.

☐ Runs either in interactive interpreter mode or as compiled code.

☐ Offers subroutine and function capabilities.

☐ Accommodates sequential and random access file types.

☐ IEEE double precision floating point plus all commonly used arithmetic subroutines.

☐ Supports real, integer, string, and dimensioned variable types.

☐ Offers arithmetic, logical, string, and relational expression evaluation capabilities.

☐ Provides a highly structured control statement syntax including IF-THEN-ELSE, WHILE-NEXT, UNTIL-NEXT, FOR-WHILE, FOR-UNTIL, as well as other standard BASIC constructs.

☐ Incorporates statement modifiers such as UNLESS, WHILE or UNTIL to provide a richer set of control constructs.

☐ Supports complete range of arithmetic functions, including trigonometrics, logarithms, exponentiation, and random number generation.

☐ Provides powerful matrix arithmetic functions, including TRN, INV, and DET.

☐ Offers extensive string manipulation and conversion routines such as LEN, MID, CHR$, INSTR, VAL NUM$, and CVT$.

BASIC PLUS runs under UNISIS,™ Codata's implementation of the UNIX™ operating system.

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CODATA SYSTEMS CORPORATION

LANGUAGE/ SOFTWARE NOTES C COMPILER

Codata offers a complete 68000 compiler for writing software in the versatile C language on Codata systems. Developed from the Bell Portable C Compiler, the Codata Compiler is usable as a native code compiler for 68000-based systems. This flexible compiler enables the user to define complex data structures and to link multiple source files and modules. Simple, fast and compact, the Codata C Compiler enhances the portability of programs written in C.

The Codata C Compiler produces clear diagnostics and generates exemplary code. The compiler package includes the UNISIS™ assembler, an optimizer which can be optionally invoked, and a full complement of C Library files.

FEATURES

- ☐ Portability
- ☐ Data Structures
- ☐ Macroprocessor
- ☐ Capacity for Separate Compilations
- ☐ Facility to Define Bit Fields
- ☐ Structure and Variable Initialization

The C language is attaining exceptional popularity as a language for research, systems and business programming. The language is especially useful for writing portable programs, which can be run without change on a variety of hardware. The design of Codata's compiler is based directly from Bell Laboratories' Portable C Compiler, which sets the industry standard for C Compilers on UNIX.™

The Codata standard assembler, AS, translates the assembly language instructions into object code. Object files are rendered executable by the UNISIS standard linker/loader, ld, which utilizes the C libraries and unites separately compiled modules into executable output. (The math library includes IEEE double-precision arithmetic which helps standardize floating point operations.

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LANGUAGE/ SOFTWARE NOTES RM/COBOL

RM/COBOL is a high-level implementation of the ANSI 74 COBOL standard, designed for the development and execution of COBOL business applications on microcomputers.

The RM/COBOL language encompasses the most commonly used features offered by minicomputer and microcomputer COBOLs including multi-keyed index files. Full compatibility with the TI-990, NCR and ZILOG MCZ series COBOL's provides an established and expanding supply of applications packages.

FEATURES

- ☐ Portability of applications.
- ☐ Can interphase to C or assembly language subroutines.
- ☐ High-level COBOL lanugage based on the American National Standard X3.23-1974.
- ☐ Level-2 sequential, relative and indexed file access methods, including ALTERNATE KEYS with DUPLICATES.
- ☐ Full arithmetic capability, including CORRESPONDING and COMPUTE.
- ☐ Standard DISPLAY and COMPUTATIONAL data types, extended to include binary (COMPUTATIONAL-1), as well as packed decimal (COMPUTATIONAL-3).
- ☐ Extended ACCEPT/DISPLAY for CRT control, including cursor control prompt, screen erase, input edit, and special feature support.
- ☐ Interactive debug at the COBOL source statement level with address stop, single step, and variable display.
- ☐ Undermarked errors appearing with self-explanatory messages.
- ☐ Single pass compiler generating ready-to-execute object programs for fast, efficient program generation, loading and execution.
- ☐ Cross reference showing all references to each name, including defining, source, and destination designations.
- ☐ Efficient segmentation at the source language level.
- ☐ A complete package, custom installed under the OEM's operating system; delivered ready to ship, including full user documentation.
- ☐ Distribution of compiled object programs and supporting run-time modules are retained. This protects the source programs from unauthorized use.

RM/COBOL runs under UNISIS,™ Codata's implementation of the UNIX™ V-7 operating system.

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LANGUAGE/ SOFTWARE NOTES

APL is both a concise and powerful programming language and application development system that supports the writing, editing, using, saving, and sharing of programs.

Codata's APL is free of the limitations that plague lesser APL systems. Workspaces and individual variables can be as large as your computer will allow (the system limit is 2 gigabytes). Arrays can have up to 214,000,000 elements and up to 127 dimensions. Integer data is stored in 32-bits, just like on mainframes, and boolean data is packed one element to a bit. Floating point data is IEEE double precision for high accuracy.

KEY FEATURES:

- ☐ Partial compilation of APL functions the first time they are executed.
- ☐ Full screen features for powerful display and editing.
- ☐ A secured shared file system for easy data management.
- ☐ Nested Array features which extend APL to use tree-structured arrays of mixed numeric and character data. APL is also compatible with IBM APL2.
- ☐ A powerful communications mode that enables the compiler to act as a "simple" or "smart" terminal to computers using either the APL or ASCII character set.
- ☐ Programs and system primitives are provided to network with other APL or non-APL systems.
- ☐ Error-handling facilities protect programs and data from accidental or malicious interference.
- ☐ System functions are provided to allow APL to access standard UNIX™ files to share data with non-APL applications. An interface to the UNIX shell which allows APL to run other software packages and UNIX commands under program control.
- ☐ A general purpose formatting capability provides a simple yet powerful method for producing attractive reports.
- ☐ A full-screen editor to modify programs and data.

APL runs under UNISIS,™ Codata's implementation of the UNIX operating system.

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LANGUAGE/ SOFTWARE NOTES SMC BASIC

SMC BASIC retains the simplicity and mathematics capabilities of Dartmouth College BASIC (Beginner's All-Purpose Symbolic Instruction Code) that was developed to interest high school and college level programming students. SMC BASIC has been enhanced to include business-oriented functions for application programming and was designed to operate in an interactive, time-sharing environment as necessary to support multiple users.

BASIC is perhaps the easiest to learn programming language in use in today's business environment. BASIC statements make use of simple English directives and elementary symbols that are closely aligned to their use in printed form. With the enriched I/O capabilities that SMC BASIC offers, BASIC can be the simple and cost-effective answer to solving business application problems.

SMC BASIC offers a business application oriented, easy-to-learn and simple-to-use language processor that offers powerful I/O capabilities, automatic input editing of data, and efficient string and arithmetic functions with debugging done in the interactive mode.

KEY FEATURES

☐ Provides traditional BASIC loop and control constructs such as GOTO, RETURN, FOR-NEXT, and IF-THEN-ELSE.

☐ Subroutine and Function capabilities.

☐ Supports both indexed or Direct Access file types.

☐ Complete file maintenance and protection directives including LOCK, UNLOCK, OPEN, CLOSE, SAVE and ERASE.

☐ Provides INPUT, PRINT, READ, FIND, EXTRACT, WRITE, and REMOVE data input/output facilities.

☐ Allows definition of character translation TABLE.

☐ Extensive numeric data handling intrinsics.

☐ Extensive string manipulation intrinsics such as LEN, POS, IRO, XOR, AND, NOT, LRC, CRC, and HSH.

ADD
ADDR
BEGIN
CALL
CLEAR
CLOSE
DEF FN
DELETE
DIM (array)
DIM (string)
DIRECT
DISABLE
DROP
EDIT
ENABLE
END
ENDTRACE
ENTER
ERASE
ESCAPE
EXECUTE
EXIT
EXIT TO
EXTRACT
EXTRACT RECORD
FILE
FIND
FIND RECORD
FLOATING POINT
FOR
GOSUB
GOTO
IF THEN ELSE
INDEXED
INPUT
INPUT RECORD
IOLIST
(LET)
LIST
LOAD
LOCK
MERGE
NEXT
ON GOSUB
ON GOTO
OPEN
PRECISION
PRINT
PRINT RECORD
PROGRAM
READ
READ RECORD
RELEASE
REM
REMOVE
RESERVE
RESET
RETRY
RETURN
RUN
SAVE
SETDAY
SETERR
SETESC
SETTIME
SETTRACE
SORT
START
STOP
TABLE
UNLOCK
WAIT
WRITE
WRITE RECORD

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